# Clinical Management of Meningococcal Disease

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# Carriage and Transmission

- Only humans carry *N. meningitidis*
- Bacteria live in mucosa of nose and throat
- Spread in oral secretions & respiratory droplets
- Most persons who carry *N. meningitidis* have no symptoms of disease

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# Clinical Disease

| | Meningitis | Septicemia |
|---|---|---|
| **Signs and Symptoms** | - fever<br>- headache<br>- stiff neck | - fever<br>- rash<br>- low BP<br>- seizures, coma |
| **CSF** | cloudy | cloudy or clear |
| **Response to Antibiotics** | good | poor |

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# Meningococcal Meningitis

- 80-90% of patients in an epidemic of meningococcal disease have *meningitis*
- Fever, headache, stiff neck
  - bulging fontanelle in infants
- Cloudy CSF
- Good response to antibiotics
  - 10% of treated patients die

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# Meningococcal Septicemia

- 10-20% of patients in an epidemic meningococcal disease have *septicemia*
- More serious, progresses rapidly
- Fever, petechial or purpural rash
- Cloudy or clear CSF
- Poor response to antibiotics
  - 30% of treated patients may die

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# Principles of Case Management

- Admission to a health facility needed for diagnosis and for treatment
- Meningococcal disease can be fatal - Start antibiotics immediately
- Patient isolation is not necessary
- Good supportive care is important
- Simplify case management

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# Choice of Antibiotics

## During an Epidemic

- **Tifomycin is best in epidemics**
  - IM long acting oily chloramphenicol
  - Single dose usually effective

- ***Other antibiotics (at least a 4-day course)***
  - penicillin, ampicillin, amoxicillin
  - chloramphenicol
  - cotrimoxazole
  - sulfadiazine
  - ceftriaxone *(expensive, but only 1 dose / day)*
  - cefotaxime *(expensive)*

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# Route of Administration

- **Intramuscular Tifomycin is very effective**
  - as effective as IV ampicillin

- **If parenteral administration impossible, give**
  - oral amoxicillin or
  - oral cotrimoxazole

- **When choosing antibiotics, consider ease of administration and amount of staff needed**
  - e.g. compare
    "single IM injection of Tifomycin" *vs.*
    "IV penicillin q. 4-6 hours for 4-5 days"

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# Tifomycin

## *(100 mg / kg in a single dose)*

| Age | Dose in grams | Dose in ml |
|---|---|---|
| 15 years and over | 3.0 g | 12 ml |
| 10-14 years | 2.5 g | 10 ml |
| 6-9 years | 2.0 g | 8 ml |
| 3-5 years | 1.5 g | 6 ml |
| 1-2 years | 1.0 g | 4 ml |
| 2-11 mo. | 0.5 g | 2 ml |
| 1-8 weeks | 0.25 g | 1 ml |

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# Antibiotics for Treatment of Meningococcal Disease and Other Major Causes of Bacterial Meningitis - 1

| Agent | Route | Adult Dose | Children's Dose | Duration (days) |
|---|---|---|---|---|
| Penicillin G | IV | 3-4 MU q. 4-6 h | 400,000 U/kg q. 4-6 h | ≥4 |
| Ampicillin or Amoxicillin | IV | 2-3 g q. 6 h | 250 mg/kg q. 6 h | ≥4 |
| Amoxicillin | oral | 2-3 g q. 6 h | 250 mg/kg q. 6 h. | ≥4 |
| Chloramphenicol | IV | 1 g q. 8-12 h | 100 mg/kg q. 8-12 h | ≥4 |

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# Antibiotics for Treatment of Meningococcal Disease and Other Major Causes of Bacterial Meningitis - 2

| Agent | Route | Adult Dose | Children's Dose | Duration (days) |
|---|---|---|---|---|
| Cefotaxime | IV | 2 g q. 6 h | 250 mg/kg q. 6 h | ≥4 |
| Ceftriaxone | IM | 1-2 g | 50-80 mg/kg | single dose |
| Ceftriaxone | IV | 1-2 g q. 12-24 h | 50-80 mg/kg | ≥4 |

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# Antibiotics for Treatment of Meningococcal Disease and Other Major Causes of Bacterial Meningitis - 3

| Agent | Route | Adult Dose | Children's Dose | Duration (days) |
|---|---|---|---|---|
| Cotrimoxazole | IV / IM | 2 g SMZ q. 12 h | 100 mg SMZ/kg q. 12 h | ≥4 |
| Cotrimoxazole | oral | 2 g SMZ q. 12 h | 100 mg SMZ/kg q. 12 h | ≥4 |
| Sulfadiazine | IV | 1 g q. 4 h | 200 mg/kg q. 4 h | ≥4 |

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# Supportive Therapy

- Paracetamol for fever
- Correct dehydration
  - IV, via NG or orally, depending on degree of dehydration and mental state of patient
- Anticonvulsants & antiemetics, if needed
- Feed patients
- Prevent bedsores

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# Record Patient Information

- name
- age
- sex
- address
- date
- diagnosis
  - basis for Dx = clinical? CSF? other lab?
- specimens obtained / CSF appearance
- treatment
- outcome (lived, died, referred)

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# Principles of Case Management

## *Summary*

- Admission to a health facility needed
- Start antibiotics immediately
  - Tifomycin is best choice in a large epidemic
- Patient isolation is not necessary
- Good supportive care is important
- Simplify case management

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